CLAIMS

What is claimed is:

1. A method for processing video image data includes a plurality of different types of data such as position, texture and color data, the method comprising:

providing tasks to be performed on each different type of data of the image data;

dividing the image data into a plurality of groups based on the type of data for each group, determining a set of arithmetic operations required to accomplish the tasks provided for the corresponding type of data;

assigning each arithmetic operation to one of a plurality of commonly used arithmetic units;

performing each arithmetic operation by the assigned arithmetic unit whereby each type of data is transformed in accordance with the corresponding provided tasks; and

combining the transformed data of each group.

2. The method of claim 1 wherein the plurality of data groups comprises a position group for position vertex parameters, a color group for color vertex parameters and a texture group for texture vertex parameters.

3. The method of claims 1 wherein the plurality of said commonly used arithmetic units comprises an addition unit and a multiplication unit.

4. The method of claim 1 wherein the determining a set of arithmetic operations for each task is based on in part by a sequence of arithmetic states.

5. The method of claim 1 further comprising providing a queue for each of the plurality of commonly used arithmetic units and wherein each assigned arithmetic operation is sent to the queue associated with its commonly used arithmetic unit.

6. The method of claim 5 further comprising preventing the arithmetic units from performing the arithmetic operations of a task out of sequence.

7. An apparatus for processing video image data including a plurality of different types of data such as position, texture and color data, the apparatus comprising:

means for providing tasks to be performed on each different type of data of the image data;

means for dividing the image data into a plurality of groups based on the type of data for each group, and for determining a set of arithmetic operations required to accomplish the tasks provided for the corresponding type of data;

means for assigning each arithmetic operation to one of a plurality of commonly used arithmetic units;

means for performing each arithmetic operation by the assigned arithmetic unit whereby each type of data is transformed in accordance with the corresponding provided tasks; and

means for combining the transformed data of each group.

8. The apparatus of claim 7 wherein the plurality of data groups comprises a position group for position vertex parameters, a color group for color vertex parameters and a texture group for texture vertex parameters.

9. The apparatus of claim 7 wherein the plurality of said commonly used arithmetic units comprises an addition unit and a multiplication unit.

10. The apparatus of claim 7 wherein for each data group, the arithmetic operation set comprises a set of arithmetic states and the determined operations for each task are defined by a sequence of the set's arithmetic states.

11. The apparatus of claim 7 further comprising a queue for each of said commonly used arithmetic units and wherein each arithmetic operation is sent to the queue associated with its commonly used arithmetic unit.

12. The apparatus of claim 11 further comprising means for preventing the arithmetic units from performing the arithmetic operations of a task out of sequence.

13. An apparatus for performing video processing, the video processing including performing tasks on vertex parameters, the apparatus comprising:

a scheduler having an input configured to receive tasks and for arranging the vertex parameters to be processed into a plurality of groups based on in part characteristics of the vertex parameters;

the sequencer for each group:

determining the tasks required to process that group's parameters, determining a set of arithmetic operations required to accomplish that group's tasks, each arithmetic operation to be performed by one of a plurality of commonly used arithmetic

units, and sending each of the arithmetic operations of each of that group's tasks to the arithmetic unit associated with that arithmetic operation; and

each of said commonly used arithmetic units, having an input configured to receive the sent arithmetic operations and vertex parameters associated with the sent operations and for performing the sent arithmetic operations on the sent vertex parameters.

14. The apparatus of claim 13 wherein the plurality of groups comprises a position group for position vertex parameters, a color group for color vertex parameters and a texture group for texture vertex parameters.

15. The apparatus of claim 13 wherein the plurality of said commonly used arithmetic units comprises an addition unit and a multiplication unit.

16. The apparatus of claim 13 wherein for each group, the arithmetic operation set comprises a set of arithmetic states and the determined operations for each task are defined by a sequence of the set's arithmetic states.

17. The apparatus of claim 13 further comprising a queue for each of said commonly used arithmetic units and wherein the sent arithmetic operations are sent to the queue associated with its commonly used arithmetic unit.

18. The apparatus of claim 17 wherein the sequencer prevents the arithmetic units from performing the arithmetic operations of a task out of sequence.